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10/781,249	02/18/2004	Stanley Loren Bentley	6890-74182	3138

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EXAMINER	
WHITMORE, STACY	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/781,249	BENTLEY ET AL.	
	Examiner	Art Unit	
	Stacy A. Whitmore	2825	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *RCE and amendement dated 11/26/2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-52* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-52* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *7/24/2007*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1-11, 13-28, 30-42, and 44-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Perry (US Patent 6,678,877) in view of Kumagai (US Patent 6,496,957)

Note that Kumagai '957 was cited on the IDS dated 12/20/2006.

2. As for the claims, Perry discloses the invention substantially as claimed, including:

1. A method of designing an electronic assembly, the method comprising the steps of: transmitting a user interface that requests entry of electronic assembly design data [abstract; col. 18, lines 20-46, any of figures 10-26], receiving user-supplied electronic assembly design data via the user interface [abstract; col. 18, lines 20-46; figs. 6-7, and 10-26]; retrieving assembly cost data in response receiving to the user-supplied electronic assembly design data from an assembly cost database, the assembly cost data including materials cost [col. 9, lines 4-20, 41-44, 55-61, the data of BOM, size, price, and other ratings are costs of the assembly]; and

updating the user interface in response to using the assembly cost data [abstract; col. 18, lines 20-46, and col. 9, the user display is updated in accordance with user selections of components and there associated costs];

2. The method of claim 1, wherein transmitting a user interface comprises transmitting the user interface to a client machine via a publicly-accessible global network in response to a user-supplied request received by a server machine via a publicly-accessible global network [abstract; col. 18, lines 20-46, the user interface may be on the web, server, client machine, or other machine of choice];

3. The method of claim 1, wherein transmitting a user interface comprises transmitting the user interface application from a server machine to a client machine via the internet [abstract; col. 18, lines 20-46, the user interface may be on the web, server, client machine, or other machine of choice];

4. The method claim 1, wherein transmitting a user interface comprises transmitting an assembly cost database with the user interface from a server machine to a client machine via a publicly-accessible global network [abstract; col. 18, lines 20-46, col. 9, the user interface and other database information may be transmitted to and from, or stored on any of the web, server, client machine, or other machine of choice];

5. The method of claim 1, wherein receiving user-supplied electronic design data comprises receiving user-supplied electronic assembly design data via an input device of a client machine [abstract; col. 18, lines 20-46, the user interface may be on the web, server, client machine, or other machine of choice; figs. 6-7];

6. The method of claim 1, wherein receiving user-supplied electronic design data comprises receiving user-supplied electronic assembly design data via a publicly-accessible global network [abstract; col. 18, lines 20-46, col. 9, the user interface and other database information may be transmitted to and from, or stored on any of the web, server, client machine, or other machine of choice; figs. 6-7];

7. The method of claim 1, wherein retrieving assembly cost data comprises retrieving the assembly cost data from an assembly cost database stored on a client machine in response to the user-supplied electronic assembly design data [abstract; col. 18, lines 20-46, col. 9, figs. 6-7, the user interface and other database information may be

transmitted to and from, or stored on any of the web, server, client machine, or other machine of choice];

8. The method of claim 1, wherein retrieving assembly cost data comprises retrieving the assembly cost data, via the publicly-accessible global network, from an assembly cost database stored on a server machine in response to a user-supplied electronic assembly design data [abstract; col. 18, lines 20-46, col. 9, figs. 6-7, the user interface and other database information may be transmitted to and from, or stored on any of the web, server, client machine, or other machine of choice];

9. The method of claim 1, wherein retrieving assembly cost data comprises retrieving the assembly cost data from a server machine via a publicly-accessible global network [abstract; col. 18, lines 20-46, col. 9, figs. 6-7, the user interface and other database information may be transmitted to and from, or stored on any of the web, server, client machine, or other machine of choice];

10. The method of claim 1, further comprising retrieving assembly capability data from an assembly capability database in response to the user-supplied electronic assembly design data [col. 6 discloses capability data; abstract; col. 18, lines 20-46, col. 9, figs. 6-7, the user interface and other database information may be transmitted to and from, or stored on any of the web, server, client machine, or other machine of choice];

11. The method of claim further comprising updating the user interface on a client machine based on the assembly capability data [col. 6 discloses capability data; abstract; col. 18, lines 20-46, col. 9, figs. 6-7, the user interface and other database information may be transmitted to and from, or stored on any of the web, server, client machine, or other machine of choice];

13. The method of claim 1, further comprising determining a per-unit assembly cost value based on the assembly cost data [col. 6 discloses capability data; abstract; col. 18, lines 20-46, col. 9 - especially price, figs. 6-7, the user interface and other database information may be transmitted to and from, or stored on any of the web, server, client machine, or other machine of choice];

14. The method of claim 13, wherein determining a per-unit setup cost value and a per-unit run cost value [col. 6 discloses capability data; abstract; col. 18, lines 20-46, col. 9 –

col. 10 – where setup and run costs are component selections (costs of component) and simulations, figs. 6-7, the user interface and other database information may be transmitted to and from, or stored on any of the web, server, client machine, or other machine of choice];

16. The method of claim 13, wherein updating the user interface comprises displaying the per-unit assembly cost value to the user [col. 9, lines 55-61];

19. The method of claim 1, further comprising the steps of:

determining a user selected-portion of the user interface, retrieving an electronic assembly design image based on the user selected-portion, and displaying the electronic assembly design image on a client machine to the user [figs. 16A – 20A, col. 15-16 disclose various ways of display on the client machine];

20. A method of designing an electronic assembly, the method comprising the steps of:

transmitting a user interface that requests entry of electronic assembly design data [abstract; col. 18, lines 20-46, col. 9, figs. 6-7, and 10-26, the user interface and other database information may be transmitted to and from, or stored on any of the web, server, client machine, or other machine of choice];

receiving user-supplied electronic assembly design data input via the user interface [abstract; col. 18, lines 20-46, col. 9, figs. 6-7, the user interface and other database information may be transmitted to and from, or stored on any of the web, server, client machine, or other machine of choice];

retrieving assembly capability data in response to receiving the user-supplied electronic assembly design data from an assembly capability database [abstract; col. 18, lines 20-46, col. 9, figs. 6-7, col. 6 discloses capability data, the user interface and other database information may be transmitted to and from, or stored on any of the web, server, client machine, or other machine of choice], and updating the user interface application on the client machine based on the assembly cost data [abstract; col. 18, lines 20-46, col. 9, figs. 6-7, the user interface and other database information may be transmitted to and from, or stored on any of the web, server, client machine, or other machine of choice];

21. The method of claim 20, wherein transmitting a user interface comprises transmitting the user interface to a client machine via a publicly-accessible global network in response to a user-supplied request received by the server machine via a publicly-accessible global network [abstract; col. 18, lines 20-46, col. 9, figs. 6-7, the user interface and other database information may be transmitted to and from, or stored on any of the web, server, client machine, or other machine of choice];

22. The method of claim 20, wherein transmitting a user interface comprises transmitting the user interface from a server machine to a client machine via the Internet [abstract; col. 18, lines 20-46, col. 9, figs. 6-7, the user interface and other database information may be transmitted to and from, or stored on any of the web, server, client machine, or other machine of choice];

23. The method claim 20, wherein transmitting a user interface comprises transmitting an assembly capability database with the user interface from a server machine to a client machine via a publicly-accessible global network [abstract; col. 18, lines 20-46, col. 9, figs. 6-7, the user interface and other database information may be transmitted to and from, or stored on any of the web, server, client machine, or other machine of choice];

24. The method of claim 20, wherein receiving user-supplied electronic assembly design data comprises receiving user-supplied electronic assembly design data via an input device of a client machine [abstract; col. 18, lines 20-46, col. 9, figs. 6-7, the user interface and other database information may be transmitted to and from, or stored on any of the web, server, client machine, or other machine of choice, col. 15-16 disclose various methods of input of user supplied assembly design data, figs. 16A – 20A];

25. The method of claim 20, wherein receiving user-supplied electronic assembly design data comprises receiving user-supplied electronic assembly design data via a publicly-accessible global network [abstract; col. 18, lines 20-46, col. 9, figs. 6-7, col. 6 discloses various capability data, the user interface and other database information may be transmitted to and from, or stored on any of the web, server, client machine, or other machine of choice, col. 15-16 disclose various methods of input of user supplied assembly design data, figs. 16A – 20A];

26. The method of claim 20, wherein retrieving assembly capability data comprises retrieving assembly capability data from an assembly capability database stored on a client machine in response to the user-supplied electronic assembly design data [abstract; col. 18, lines 20-46, col. 9, figs. 6-7, the user interface and other database information may be transmitted to and from, or stored on any of the web, server, client machine, or other machine of choice, col. 15-16 disclose various methods of input of user supplied assembly design data, figs. 16A – 20A];

27. The method of claim 20, wherein retrieving assembly capability data comprises retrieving assembly capability data, via a publicly-accessible global network, from an assembly capability database stored on a server machine based on the user-supplied electronic assembly design data [abstract; col. 18, lines 20-46, col. 9, figs. 6-7, col. 6 discloses various capability data, the user interface and other database information may be transmitted to and from, or stored on any of the web, server, client machine, or other machine of choice, col. 15-16 disclose various methods of input of user supplied assembly design data, figs. 16A – 20A];

28. The method of claim 27, wherein retrieving assembly capability data comprises retrieving the assembly capability data via a publicly-accessible global network [abstract; col. 18, lines 20-46, col. 9, figs. 6-7, col. 6 discloses various capability data, the user interface and other database information may be transmitted to and from, or stored on any of the web, server, client machine, or other machine of choice, col. 15-16 disclose various methods of input of user supplied assembly design data, figs. 16A – 20A];

30. The method of claim 20, further comprising:
determining a user selected-portion of the user interface, retrieving an electronic assembly design image based on the user selected-portion, and displaying the electronic assembly design image on a client machine to the user [abstract; col. 18, lines 20-46, col. 9, figs. 6-7, col. 6 discloses various capability data, the user interface and other database information may be transmitted to and from, or stored on any of the web, server, client machine, or other machine of choice, col. 15-16 disclose various

methods of input of user supplied assembly design data, figs. 16A – 20A also show user selected portions of assembly design data];

31. A method of designing an electronic assembly, the method comprising: transmitting a user interface from a server machine to a client machine via a publicly-accessible global network, receiving user-supplied electronic assembly design data via the user interface, retrieving assembly cost data in response to the user-supplied electronic assembly design data from an assembly cost database, retrieving assembly capability data in response to the user-supplied electronic assembly design data from an assembly capability database, and updating the user interface based on at least one of the assembly cost data and the assembly capability data [abstract; col. 18, lines 20-46, col. 9, figs. 6-7, col. 6 discloses various capability data, the user interface and other database information may be transmitted to and from, or stored on any of the web, server, client machine, or other machine of choice, col. 15-16 disclose various methods of input of user supplied assembly design data, figs. 16A – 20A];

32. The method of claim 31, wherein transmitting a user interface comprises transmitting the user interface to a client machine via a publicly- accessible global network in response to a user-supplied request received by a server machine via the publicly-accessible global network [abstract; col. 18, lines 20-46, col. 9, figs. 6-7, col. 6 discloses various capability data, the user interface and other database information may be transmitted to and from, or stored on any of the web, server, client machine, or other machine of choice, col. 15-16 disclose various methods of input of user supplied assembly design data, figs. 16A – 20A];

33. The method of claim 31, wherein transmitting a user interface comprises transmitting the user interface from a server machine to a client machine via the Internet [abstract; col. 18, lines 20-46, col. 9, figs. 6-7, col. 6 discloses various capability data, the user interface and other database information may be transmitted to and from, or stored on any of the web, server, client machine, or other machine of choice, col. 15-16 disclose various methods of input of user supplied assembly design data, figs. 16A – 20A];

34. The method claim 31, wherein transmitting a user interface comprises transmitting an assembly cost database and an assembly capability database from a server machine to a client machine via a publicly-accessible global network [abstract; col. 18, lines 20-46, col. 9, figs. 6-7, col. 6 discloses various capability data, the user interface and other database information may be transmitted to and from, or stored on any of the web, server, client machine, or other machine of choice, col. 15-16 disclose various methods of input of user supplied assembly design data, figs. 16A – 20A];

35. The method of claim 31, wherein receiving user-supplied electronic assembly design comprises receiving user-supplied electronic design data via an input device of a client machine [abstract; col. 18, lines 20-46, col. 9, figs. 6-7, col. 6 discloses various capability data, the user interface and other database information may be transmitted to and from, or stored on any of the web, server, client machine, or other machine of choice, col. 15-16 disclose various methods of input of user supplied assembly design data, figs. 16A – 20A];

36. The method of claim 31, wherein receiving user-supplied electronic assembly design comprises receiving user-supplied electronic design data via an input device of a publicly-accessible global network [abstract; col. 18, lines 20-46, col. 9, figs. 6-7, col. 6 discloses various capability data, the user interface and other database information may be transmitted to and from, or stored on any of the web, server, client machine, or other machine of choice, col. 15-16 disclose various methods of input of user supplied assembly design data, figs. 16A – 20A];

37. The method of claim 31, wherein retrieving assembly cost data comprises retrieving assembly cost data from an assembly cost database stored on a client machine in response to the user-supplied electronic assembly design data [abstract; col. 18, lines 20-46, col. 9, figs. 6-7, col. 6 discloses various capability data, the user interface and other database information may be transmitted to and from, or stored on any of the web, server, client machine, or other machine of choice, col. 15-16 disclose various methods of input of user supplied assembly design data, figs. 16A – 20A];

38. The method of claim 31, wherein retrieving assembly cost data comprises retrieving assembly cost data from an assembly cost database stored on a server machine in

response to the user-supplied electronic assembly design data [abstract; col. 18, lines 20-46, col. 9, figs. 6-7, col. 6 discloses various capability data, the user interface and other database information may be transmitted to and from, or stored on any of the web, server, client machine, or other machine of choice, col. 15-16 disclose various methods of input of user supplied assembly design data, figs. 16A – 20A];

39. The method of claim 31, wherein retrieving assembly cost data comprises retrieving the assembly cost data from an assembly cost database via a publicly-accessible global network wherein retrieving assembly capability data includes retrieving assembly capability data from an assembly capability database stored on the client machine in response to the user-supplied electronic assembly design data [abstract; col. 18, lines 20-46, col. 9, figs. 6-7, col. 6 discloses various capability data, the user interface and other database information may be transmitted to and from, or stored on any of the web, server, client machine, or other machine of choice, col. 15-16 disclose various methods of input of user supplied assembly design data, figs. 16A – 20A];

40. The method of claim 31, wherein retrieving assembly capability data comprises retrieving assembly from an assembly capability database stored on a client machine in response to the user-supplied electronic assembly design data [abstract; col. 18, lines 20-46, col. 9, figs. 6-7, col. 6 discloses various capability data, the user interface and other database information may be transmitted to and from, or stored on any of the web, server, client machine, or other machine of choice, col. 15-16 disclose various methods of input of user supplied assembly design data, figs. 16A – 20A];

41. The method of claim 31, wherein retrieving assembly capability data comprises retrieving assembly from an assembly capability database stored on a server machine in response to the user-supplied electronic assembly design data [abstract; col. 18, lines 20-46, col. 9, figs. 6-7, col. 6 discloses various capability data, the user interface and other database information may be transmitted to and from, or stored on any of the web, server, client machine, or other machine of choice, col. 15-16 disclose various methods of input of user supplied assembly design data, figs. 16A – 20A];

42. The method of claim 31, wherein retrieving assembly capability data comprises retrieving the assembly capability data from an assembly capability database via a

publicly-accessible global network [abstract; col. 18, lines 20-46, col. 9, figs. 6-7, col. 6 discloses various capability data, the user interface and other database information may be transmitted to and from, or stored on any of the web, server, client machine, or other machine of choice, col. 15-16 disclose various methods of input of user supplied assembly design data, figs. 16A – 20A];

44. The method of claim 31, further composing determining a per-unit assembly cost value based on the assembly cost data [abstract; col. 18, lines 20-46, col. 9 especially price, figs. 6-7, col. 6 discloses various capability data, the user interface and other database information may be transmitted to and from, or stored on any of the web, server, client machine, or other machine of choice, col. 15-16 disclose various methods of input of user supplied assembly design data, figs. 16A – 20A];

45. The method of claim 44, wherein determining a per-unit assembly cost value comprises determining a per-unit setup cost value and a per-unit run cost value [col. 6 discloses capability data; abstract; col. 18, lines 20-46, col. 9 – col. 10 – where setup and run costs are component selections (costs of component) and simulations , figs. 6-7, the user interface and other database information may be transmitted to and from, or stored on any of the web, server, client machine, or other machine of choice];

47. The method of claim 44, wherein updating the user interface comprises displaying the per-unit assembly cost value to the user [col. 6 discloses capability data; abstract; col. 18, lines 20-46, col. 9 especially price – col. 10 – where setup and run costs are component selections (costs of component) and simulations , figs. 6-7, the user interface and other database information may be transmitted to and from, or stored on any of the web, server, client machine, or other machine of choice];

50. An article comprising a computer-readable signal-bearing medium having therein a plurality of instructions which, when executed by a processor, cause the processor to: display a user interface that requests entry of electronic assembly design data to a user, retrieve assembly cost data in response to receiving user-supplied electronic assembly design data from an assembly cost database, retrieve assembly capability data in response to the user-supplied electronic assembly design data from an assembly capability database, and update the user interface based on at least one of the

assembly cost data and the assembly capability data [abstract; col. 18, lines 20-46, col. 9, figs. 6-7, col. 6 discloses various capability data, the user interface and other database information may be transmitted to and from, or stored on any of the web, server, client machine, or other machine of choice, col. 15-16 disclose various methods of input of user supplied assembly design data, figs. 16A – 20A];

51. The article of claim 50, wherein the plurality of instructions, when executed by the processor, further cause the processor to retrieve the assembly cost data from the assembly cost database via a publicly-accessible global network [abstract; col. 18, lines 20-46, col. 9, figs. 6-7, col. 6 discloses various capability data, the user interface and other database information may be transmitted to and from, or stored on any of the web, server, client machine, or other machine of choice, col. 15-16 disclose various methods of input of user supplied assembly design data, figs. 16A – 20A];

52. The article of claim 50, wherein the plurality of instructions, when executed by the processor, further cause the processor to retrieve the assembly capability data from the assembly capability database via a publicly-accessible global network [abstract; col. 18, lines 20-46, col. 9, figs. 6-7, col. 6 discloses various capability data, the user interface and other database information may be transmitted to and from, or stored on any of the web, server, client machine, or other machine of choice, col. 15-16 disclose various methods of input of user supplied assembly design data, figs. 16A – 20A].

As for claims 1, 20, 31, and 50, Perry does not specifically disclose that the assembly cost data comprises a processing cost; that assembly capability data indicates the manufacturing capability of an electronic assembly manufacturer, and claims 2-, 31, and 50, that the assembly capability data including a range of tolerances within the manufacturing capability of the electronic assembly manufacturer.

Kumagai discloses assembly cost data comprises a processing cost; that assembly capability data indicates the manufacturing capability of an electronic assembly manufacturer [col. 23, figs. 2, 4, and 12; col. 31, line 51 – col. 33, line 55], and that the assembly capability data including a range of tolerances within the manufacturing

capability of the electronic assembly manufacturer [at least figs. 12, 14, 19, 21-22, 24-26, 33-34, and 37-38; where Kumagai discloses multiple instances of a range of tolerances within the manufacturing capability of the assembly manufacturer such as ranks and ranges with percentages of ranges related to various manufacturing capability items, rankings related to know-how and circuit items and to process (at least figs. 33-34)].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Perry and Kumai because Perry and Kumagai are directed to the design and manufacture of electronic circuitry. Perry is also directed to the design of electronic circuitry (PCB) where the design choices are sent to a manufacturer for assembly of the final designed product [Perry, col. 15, lines 43-53]. Therefore, adding the processing cost to the assembly cost data of Perry, and indicating the manufacturing capability, including a range of tolerances, of an electronic assembly manufacturer would improve Perry's system by providing a better understanding to a designer as to the cost of manufacture of a design that is created by the designer and the design quality by giving tolerances, thereby allowing the designer to make better design choices before the manufacture of the designed product [see Kumagai col. 21, lines 19-33; col. 33, lines 43-55].

3. As for the claims 15, 17-18, 46, and 48-49, Perry discloses the invention substantially as claimed, including:

Methods, and article comprising computer instructions for designing an electronic assembly as cited above in the rejection under 35 USC 103 (a) to Perry of claims 1-11, 13-14, 16, 19-28, 30-42, 44-45, 47, and 50-52 above and including the per unit setup cost value and per unit run value in response to user-supplied assembly design data as cited above.

Perry does not specifically disclose

15. and 46. wherein determining the per-unit setup cost value and the per-unit run cost value includes determining a per-unit setup cost value and a per-unit run cost value for each work center of an electronic assembly process in response to the user-supplied electronic assembly design data;
17. and 48. determining a tooling cost value in response to and associated with the user-supplied electronic assembly design data;
18. and 49. wherein determining a tooling cost value comprises determining a tooling cost value based on the assembly cost data;

Kumagai discloses determining costs related to user input (design or assembly data) to the work center and tooling costs [col. 23, lines 23-67, such items as per unit cost, equipment cost, which are costs on a per work center basis].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Perry and Kumai because Perry and Kumagai are directed to the design and manufacture of electronic circuitry. Perry is also directed to the design of electronic circuitry (PCB) where the design choices are sent to a manufacturer for assembly of the final designed product [Perry, col. 15, lines 43-53]. Therefore, determining the per-unit setup cost value and the per-unit run cost value includes determining a per-unit setup cost value and a per-unit run cost value for each work center of an electronic assembly process, and determining a tooling cost value would improve Perry's system by providing a better understanding to a designer as to the cost of manufacture of a design that is created by the designer, thereby allowing the designer to make better design choices before the manufacture of the designed product [see Kumagai col. 21, lines 19-33; col. 33, lines 43-55].

4. Claims 12, 29, and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Perry (US Patent 6,678,877) in view of Kumagai (US Patent 6,496,957), and further in view of Vilella (US Patent Application Publication Number 2004/0208354).

5. As for the claims, Perry in view of Kumagai discloses the invention substantially as claimed, including:

Methods, and article comprising computer instructions for designing an electronic assembly as cited above in the rejection under 35 USC 102 (e) to Perry of claims 1-11, 13-14, 16, 19-28, 30-42, 44-45, 47, and 50-52 above and including updating the user interface application on the client machine based on the assembly capability data as cited above.

Perry in view of Kumagai does not specifically disclose displaying a traffic light image to a user.

As for claims 12, 29, and 43, Vilella discloses displaying a traffic light image to a user [abstract, paragraphs 0004-0005, 0025, and 0044].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Perry in view of Kumagai and Vilella because using a traffic light displayed to a user would provide feedback information to the user such as status and error information so that the user could interactively respond to assembly design to make corrections [see Vilella, paragraphs 0004-0005, 0025, and 0044].

6. Applicant's arguments filed November 26, 2007 have been fully considered but they are not persuasive.

In the remarks, applicant argues in substance:
A: With respect to 1-52, applicant argues the motivation to combine Perry and Kumagai is non-obvious as required in KSR because Perry either teaches away from the claimed invention, or that adding the processing cost to the assembly cost data of

Perry....would improve Perry's system by providing a better understanding to the designer as to the cost of manufacture of a design fails the reasoning requirement set forth in KSR because such a modification is illogical in view of the teaching of Perry.

B: Perry in view of Kumagai does not disclose retrieving assembly capability data that indicates the manufacturing capability of an electronic assembly manufacturer in response to receiving the user-supplied electronic assembly design data from an assembly capability database, especially because manufacturing capability referes to the "process capabilites of the manufacturer of the electronic assembly" (see page 11, lines 24-27 of Applicant's application)" which are typically dependent upon the abilities or limitations of manufacturing machines. As such "know-how" items are clearly not synonymous with manufacturing capability data.

Examiner disagrees for the following reasons:

With respect to A: It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Perry and Kumai because Perry and Kumagai are directed to the design and manufacture of electronic circuitry. Perry is also directed to the design of electronic circuitry (PCB) where the design choices are sent to a manufacturer for assembly of the final designed product [Perry, col. 15, lines 43-53]. Therefore, adding the processing cost to the assembly cost data of Perry, and indicating the manufacturing capability, including a range of tolerances, of an electronic assembly manufacturer would improve Perry's system by providing a better understanding to a designer as to the cost of manufacture of a design that is created by the designer and the design quality by giving tolerances, thereby allowing the designer to make better design choices before the manufacture of the designed product [see Kumagai col. 21, lines 19-33; col. 33, lines 43-55]. Improvement of the ability of the designer to make knowledgeable choices concerning the cost and/or quality of a design would improve the designer's ability to make good choices related to

the design, thereby allowing the designer to improve design quality and reduce cost of the design.

With respect to B: Perry in view of Kumagai does disclose retrieving assembly capability data that indicates the manufacturing capability of an electronic assembly manufacturer in response to receiving the user-supplied electronic assembly design data from an assembly capability database [see Perry with respect to the rejection of claims 1, 20, 31, and 50, and Kumagai - Kumagai discloses assembly cost data comprises a processing cost; that assembly capability data indicates the manufacturing capability of an electronic assembly manufacturer [col. 23, figs. 2, 4, and 12; col. 31, line 51 – col. 33, line 55], and that the assembly capability data including a range of tolerances within the manufacturing capability of the electronic assembly manufacturer [at least figs. 12, 14, 19, 21-22, 24-26, 33-34, and 37-38; where Kumagai discloses multiple instances of a range of tolerances within the manufacturing capability of the assembly manufacturer such as ranks and ranges with percentages of ranges related to various manufacturing capability items, rankings related to know-how and circuit items and to process (at least figs. 33-34)]].

Further applicant argues that manufacturing capability refers to process capabilities in relation to machines. Specifically, applicant argues that especially because manufacturing capability referes to the "process capabilites of the manufacturer of the electronic assembly" (see page 11, lines 24-27 of Applicant's application)“ which are typically dependent upon the abilities or limitations of manufacturing machines. As such “know-how” items are clearly not synonymous with manufacturing capability data.

First, Kumagai is not limited to know-how items as disclosed in [at least figs. 12, 14, 19, 21-22, 24-26, 33-34, and 37-38; where Kumagai discloses multiple instances of a range of tolerances within the manufacturing capability of the assembly manufacturer such as ranks and ranges with percentages of ranges related to various manufacturing

capability items, rankings related to know-how and circuit items and to process (at least figs. 33-34)].

Second, applicant does not limit this definition to machine process costs in the specification at page 11, lines 24-27 as argued.

Specifically at page 10, lines 8-26, applicant states "As described, the contents of the databases 28, 30 (both as maintained on the data server 24 and hard coded in the user interface application) are utilized to provide dynamic updates to the designer based on the design specifications being entered by the designer. To do so, the databases 28, 30 contain costing data associated with the manufacturer's operation. In particular, a manufacturer of electronic assemblies may utilize a costing structure in which the cost per assembly is calculated as a function of the assembly's characteristics. Hence, when such characteristics are entered by the designer, the data stored in the cost database 28 may be used to calculate the cost of the electronic assembly. For example, the electronic assembly manufacturer's operation may be divided into a plurality of work centers each of which represents a certain step or phase of the assembly process. Data in the form of, for example, fixed or variable multipliers for each cost center are stored in the cost database 28. Hence, when information relating to a particular design of an electronic assembly is entered by the designer, the cost per work center may be calculated based on such information. Moreover, the time required in each work center of the assembly process may also be estimated based on the design. Typically, the longer the processing time, the more expensive the design is to produce. Hence, such timing information may be calculated and converted into cost data and stored in the cost database 28.".

Specifically at page 11, line 24 to page 12, line 6, applicant states respectively, "The cost database 28 also includes cost data associated with different assembly technology types as well. For example, cost data associated with component types (e.g., surface mounted or through hole components), IPC Class, etcetera are stored in the cost

database 28. As a result, for example, should the designer want to know the cost penalty for converting a design having components mounted only on the component side of the board to a design having components on both the component and solder side of the board, the designer simply changes the fields corresponding to such information and watches as the cost figure (and the tooling figure) increases since cost generally increases as the design increases from having only a single side populated with components to having both sides populated with components. It should be appreciated that such an increase in the number of populated sides of the board will likely also increase the cost in one or more other work centers since the fabrication of assemblies with two populated sides is typically more complex relative to assemblies with only a single populated side. ", and "The process capability database 30 includes data related to the process capabilities of the manufacturer of the electronic assembly. In particular, the database 30 may include a number of rule sets which are used to flag or otherwise identify any violations or near-violations of the manufacturer's process capabilities. Information associated with any violations or near-violations of the manufacturer's process capabilities are communicated to the designer. Moreover, certain violations or near- violations of the manufacturer's capabilities may not completely preclude the manufacturer from building the design, but rather may create a yield or cost penalty. In these cases, any such yield or cost penalty is considered in the calculation of the board cost."

Applicant clearly does not limit such a definition to machine process costs.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stacy A. Whitmore whose telephone number is (571) 272-1685. The examiner can normally be reached on Monday-Thursday, alternate Friday 6:30am - 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Chiang can be reached on (571) 272-7483. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/Stacy A Whitmore/
Primary Examiner
Art Unit 2825

SAW
January 14, 2008